REMARKS:

• Status of the Application

Applicant notes that the application has been moved from the docket of Examiner Whisenant to the docket of Examiner Sisson. See Page 2, Paragraph 1 of Office Action dated November 24, 2004. Applicant additionally notes its surprise that rejections under 35 U.S.C. §§101 and 112, first paragraph, are being raised for the first time in this non-final rejection after novelty and non-obviousness concerns were raised and addressed in at least three previous non-final rejections and associated amendments. Applicant sincerely hopes that this response will satisfy all concerns and that the pending claims will be allowed, such that the lengthy prosecution of this application may come to a close.

• Status of the Claims

Claims 34-36, 38-40, and 42-54 are pending in the present application.

• Objections

In the Office Action dated November 24, 2004, the Examiner objected to the specification because it contained embedded hyperlinks. See Page 2, Paragraphs 2-3. Applicant has addressed this concern by amending the specification to remove all hyperlinks which are not themselves part of an embodiment of the invention. Accordingly, Applicant requests that this objection be withdrawn.

The Examiner further objected to certain "representations of nucleic acid sequences... not accompanied with a SEQ ID NO." See Page 2, Paragraphs 4-5. Applicant has addressed this

concern by amending the specification to include the identifier "SEQ ID NO: 1, 2, 3 or 4" adjacent the appropriate sequences where they appear in the specification. Accordingly, Applicant requests that this objection be withdrawn.

Applicant notes the claim objection related to ordering of the claims and further notes the Examiner's statement that, in general, the sequence will not be changed. See Pages 2-3, Paragraphs 6-7.

• **Issues under 35 U.S.C. §112, ¶1 Written Description and Enablement**

In the Office Action dated November 24, 2004, the Examiner rejected claims 34-36, 38-40 and 42-54 under 35 U.S.C. §112, first paragraph, for failing to satisfy the written description requirement, arguing that inventor did not have possession of the invention. See Pages 3-7, Paragraphs 8-16. In a related rejection of the claims based on the enablement requirement, the Examiner argues that, if the written-description requirement is not met, then the enablement requirement is not met, because one cannot enable that which one does not possess. See Pages 7-8, Paragraphs 17-18.

In making these rejections, the Examiner provides his construction of portions of the claims and then argues that the elements of the claims-so-construed are not adequately described in the specification. See Pages 5-6, Paragraphs 11-16. With regard to claim construction, claims are properly interpreted using established claim construction law, wherein claim terms are given their ordinary meaning or the meaning provided in the specification. See e.g., Gentry Gallery, Inc. v. Berline Corp., 45 USPQ2d 1498, 1501 (Fed. Cir. 1998); CCS Fitness, Inc. v. Brunswick Corp., 288 F.3d 1359, 1369 (Fed. Cir. 2002); Guttman, Inc. v. KopyKake Enterprises, Inc., 64

USPQ2d 1302 (Fed. Cir. 2002). As such, in addition to using the ordinary meaning of terms, it is proper to use the specification to interpret claim language, but it is improper to interpret claims without due consideration to the specification, and then find fault with the specification for failing to live up to the claims-so-construed. Indeed, "the [application] itself is the most significant source of the legally operative meaning of ...claim language." Vitronics Corp. v. Conceptronic, Inc., 39 USPQ 2d 1573 (Fed. Cir. 1996).

Accordingly, Applicant disagrees with the rejection for lack of written description and/or enablement in that it is based on improper claim construction. For example, the Examiner construes the claims as encompassing the non-exposure of the 'control genes' to any 'age' or 'exogenous agent' [and t]he aspect of not exposing a 'control gene' to 'age' has been construed as encompassing one suspending time [and] [s]aid 'exogenous agent' has also been construed as encompassing air, light, any temperature, pressure, gravity, etc." See Page 6, Paragraph 12; See also, Pages 5-6, Paragraphs 11 and 14.

Applicant respectfully submits that a reading of the language of the claims, given their ordinary meaning, would not involve the suspension of time or the blocking of any and all exogenous agents. The use of a "control" in scientific experimentation is common and well understood. A control is designed and defined relative to a test sample or experiment, not in a vacuum unto itself. Thus, a control is never expected to be removed from the effects of the universe; rather, it is merely removed from the variable being tested – the variable to which the test sample or experiment is subjected. The concept of a "control" is known outside the scientific community and carries an ordinary meaning. For example, Merriam-Webster defines "control" as "an experiment in which the subjects are treated as in a parallel experiment except

for omission of the procedure or agent under test and which is used as a standard of comparison in judging experimental effects." Accordingly, the claims can not be correctly construed as encompassing one suspending time or removing any and all exposure to exogenous agents, such as air, light, temperature, pressure, gravity, etc.

Accordingly, Applicant requests that the rejection under 35 U.S.C. §112, first paragraph, based on written description and enablement be withdrawn.

• **Issues under 35 U.S.C. §112, ¶1 Enablement and 35 U.S.C. §101 Utility**

The Examiner further rejected claims 34-36, 38-40 and 42-54 under 35 U.S.C. §112, first paragraph for failing to satisfy the enablement requirement arguing that undue experimentation would be required. See Pages 8-9, Paragraph 19. In a related rejection of the claims based on the utility requirement of 35 U.S.C. §101, the Examiner argues that the invention is inoperative. See Pages 11-12, Paragraphs 25-26.

In making these rejections, the Examiner construes the language of the claims: "comparing the expression of the genes ...exposed to disease, age or exogenous agent... to expression of control genes...not exposed to disease, age or exogenous agent" as requiring the suspension of time and the blocking of any and all exogenous agents. This suspension of time, etc., is argued to require undue experimentation and/or argued to make the invention inoperable. See Pages 8-9, Paragraph 19; Pages 11-12, Paragraphs 25-26.

Applicant respectfully submits that a proper reading of the language of the claims would not involve the suspension of time or the blocking of any and all exogenous agents. As described above, scientific experimentation commonly incorporates a control, which is used to determine

whether the test variable is creating observed changes. However, it is well understood that all variables being tested cannot be completely eliminated from an experiment, but one does one's best.

For example, if one were to study the effects of a test agent on cells, one may follow the following hypothetical protocol:

> (1) Plate approximately 100,000 cells of Cell Line A in two different tissue culture dishes purchased from the same manufacture and coming from the same lot;
> (2) Prepare a batch of medium and transfer approximately equal aliquots of the medium into sterilized first and second bottles purchased from the same manufacture and coming from the same lot;
> (3) Add the test agent to the first bottle of medium;
> (4) Add medium from the first bottle to a test plate of cells and add medium from the second bottle to a control plate of cells and incubate plates for the same amount of time adjacent one another in a CO_2 inclubator; and
> (5) Compare changes to the cells of the test plate with changes to the cells of the control plate.

For another example, if one were to study the effects of age on cells, one may follow the following hypothetical protocol:

> (1) Remove from liquid nitrogen a first vial of cells of Cell Line A that have been passaged 30 times and remove a second vial of cells of Cell Line A that have been passaged 4 times;
> (2) Plate approximately 100,000 cells from the first vial and about 100,000 cells from the second vial in two different tissue culture dishes purchased from the same manufacture and coming from the same lot;
> (3) Prepare a batch of medium and add equal amounts to each plate;
> (4) Incubate plates for the same amount of time adjacent one another in a CO_2 incubator; and
> (5) Compare changes to the cells of the test plate with changes to the cells of the control plate.

One can see from the above hypothetical protocols that, while every attempt is made to limit the introduction of variables such that the only variable is the one being tested (test agent, in the first protocol, and the age of the cells, in the second protocol), additional variables are

sometimes unavoidable. For example, the two plates cannot be positioned in exactly the same location within the incubator. For another example, the two plates, even if from the same lot, may have differences in their coatings. These uncontrollable variables do not limit the ability to compare the test plate exposed to the test agent or to age, with the control plate not exposed to the test agent or to age.

Thus, if one of ordinary skill in the art were to read a protocol wherein the expression of genes exposed to disease, age or exogenous agent is compared to expression of control genes not exposed to the disease, age or exogenous agent, he or she would not understand this to require the suspension of time or the ability to block any and all exogenous agents; rather, he or she would understand that one using the protocol should take precautions generally known and recognized in the art to limit the introduction of variables, other than the variable being tested.

Because practicing the claimed invention does not include suspending time or blocking any and all exogenous agents, Applicant requests that the rejection under 35 U.S.C. §112, first paragraph, based on undue experimentation, and the rejection under 35 U.S.C. §101, based on inoperability, be withdrawn.

Issues under 35 U.S.C. §112, ¶1 Enablement / Predictability

Citing *In re Fischer*, 166 USPQ 18 (CCPA 1970), the Examiner states that the nature of the art of the invention is unpredictable and thus requires a greater scope of enablement. See Pages 9-10, Paragraphs 20-21. With regard to predictability, it is unpredictable factors of an invention that give rise to an enlarged scope of enablement. Additionally, the enablement inquiry is dynamic; meaning that, the relative predictability of a particular art area may change over time,

for example, art areas that were unpredictable in 1970, were not necessarily unpredictable in 2001. Such a determination cannot be made by merely stating that the nature of the art is unpredictable; rather, the factors of the invention predictability or unpredictability should be determined. Only then can the required relative scope of enablement be identified. In any event, in the present case, the enablement requirement has been met, regardless of the standard being applied. In light of the remarks related to the above described enablement rejections, Applicant again requests the rejections be withdrawn.

• **Issues under 35 U.S.C. §101 and §112, ¶1 Lack of Utility / Mere Generation of Data**

The Examiner further rejected claims 34-36, 38-40 and 42-54 under 35 U.S.C. §101, arguing that the claims are directed toward the mere generation of data, and thus lack utility. See Pages 10-11, Paragraphs 22-23. In a related rejection based under §112, first paragraph, the Examiner argues that one skilled in the art would not know how to use an invention that is lacking utility. See Page 11, Paragraph 24.

Applicant respectfully disagrees with the position that the claims are directed toward the mere generation of data; quite to the contrary, the claims are directed toward a screening method having specific and substantial utility. The screening method of the present invention is used to determine the expression of which genes under the control of the same regulatory element is altered by age, a disease, or an exogenous agent being tested.

As set forth in the written description, "changes in expression of individual genes, either by turning expression on or off, or altering the amount of expression, can be used to assess changes in states such as age or disease." See Present Application at US 2002/0009736,

Paragraph [0061]. The specific and substantial utility of the claimed screening method is further described by the following portion of the written description:

> [The screening method may be used] to determine if there is expression of a particular gene in the array and how much, to thereby construct a "fingerprint" of the disease or disorder...The effect of a compound or composition on the disorder or disease or state can also be assessed by comparing the fingerprint obtained with control cells or tissue, and cells or tissues treated with the compound...This is especially useful for initial screening of the effect of potential drugs, either to determine potential efficacy and/or toxicity. Those compounds which appear promising can then be further screened to determine if they can reduce or reverse the severity of the disease or disorder.
>
> See Present Application at US 2002/0009736, Paragraph [0073].

Furthermore, the ability to determine expression of genes of interest and how this expression is affected by states, diseases, or agents of interest has recognized specific and substantial utility to those skilled in the art. Such recognized utility is evidence, for example, by Alberts, *et al.*, Molecular Biology of the Cell, 3rd ed. (1994), 4th ed. (2002), considered by many to be the leading molecular biology text, which devotes an entire section to studying gene expression and the utility associated with such studies. Alberts, *et al.*, Molecular Biology of the Cell, 4th ed. (2002), pp. 525-546. Accordingly, Applicant requests that the rejection under 35 U.S.C. §101 and the related rejection under §112, first paragraph, be withdrawn.

In light of the foregoing remarks, Applicant respectfully requests allowance of all claims now pending in this Application. If, after reviewing this response, there are continuing concerns, the undersigned counsel would welcome the opportunity to speak with the Examiner and/or the Supervisory Examiner to discuss possible resolutions and/or to clarify issues for appeal.

Respectfully submitted,

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